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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,985	10/24/2006	Allan Michael Stewart	STEWART 2 PCT	3401
25889	7590	07/29/2009		
COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			EXAMINER UHLIR, CHRISTOPHER J	
			ART UNIT 2832	PAPER NUMBER
			MAIL DATE 07/29/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,985	<b>Applicant(s)</b> STEWART, ALLAN MICHAEL	
	<b>Examiner</b> CHRISTOPHER UHLIR	<b>Art Unit</b> 2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 45-64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 46-49 is/are allowed.
- 6) ☒ Claim(s) 45 and 50-64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/25/2006 and 07/10/2009</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

2. Claims 50, and 60-62 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form. These claims recite only specific function of previous limitations and lacks structure. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. See MPEP § 2106 II.

3. Claims 50, 52, 53, 55, 57 and 61 are objected to because of the following informalities:

**Claim 50** includes the limitation “the twelve semitone notes of an octave of the musical scale”. However there is a lack of antecedent basis for ‘the musical scale’. This limitation should be changed to state “the twelve semitone notes of an octave of a musical scale”.

**Claims 52 and 53** include the limitation “together with the center key to operate a note”. However there is a lack of antecedent basis for ‘the center key’. This limitation should be changed to state “together with a center key to operate a note”.

**Claim 55** includes the limitation that the key units are “operable by one and the same finger”. This limitation should be changed to state “operable by one and the same finger”.

**Claim 57** includes the limitation “wherein said key units of each said finger group are arranged”. However there is a lack of antecedent basis for ‘said finger groups’.

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This limitation should be changed to state "wherein said key units of each said group are arranged".

**Claim 61** includes the limitation "wherein said keys are connected for said groups to be". However there is a lack of antecedent basis for 'said groups'. For examining purposes this limitation is interpreted as stating "wherein said keys are arranged in groups, where each group is a cluster of key units".

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 54 and 56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 54** is directed to "a plurality of spaced apart key units, each as claimed in claim 45". However 'key units' were not properly described in claim 45. It is unclear if applicant intends a key unit to be each of the plurality of keys, or a cluster of the plurality of keys. For examining purposes, this claim is interpreted to be directed to "a plurality of spaced apart key units, where each key unit make up the plurality of keys as claimed in claim 45".

**Claim 56** includes the limitation "a plurality of said groups of said key units". However there is a lack of antecedent basis for 'said groups'. It is unclear what

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applicant intends a group to mean. For examining purposes, this limitation is interpreted as stating “a plurality of groups of said key units, where each group is a cluster of key units”.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 45, 50, 51, 54-58, 63, and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Duyne (US 4,972,752).

**Regarding claim 45**, Van Duyne discloses a keyboard unit (column 1 lines 7-8) shown in Fig. 2 to have a plurality of keys surrounding a center region (key 30). Said plurality of keys are further disclosed to be operable by a single finger (column 5 lines 10-12). Due to the arrangement of said plurality of keys, said single finger can operate a single key or a collection of keys.

**In reference to claim 50**, Van Duyne discloses a unit, where the plurality of keys are connected to operate by a single touch as stated above. Said plurality of keys are disclosed to be assigned to desired pitches for producing sound (column 4 lines 3-9). Therefore said plurality of keys are capable of producing sounds that the twelve semitone notes of an octave of a musical scale.

**In reference to claim 51**, Van Duyne discloses a unit as stated above, where said plurality of keys is shown in Fig. 2 to include a center key (30).

**In reference to claim 54**, Van Duyne discloses a unit as stated above, where a plurality of spaced apart key units (1, 21, 31, etc) are shown in Fig. 2 to make up the plurality of keys.

**In reference to claim 55**, Van Duyne discloses a unit, where a plurality of said spaced apart key units (1, 21, 31, etc) are operable by one finger due to their arrangement as stated above.

**In reference to claim 56**, Van Duyne discloses a unit as stated above, where a plurality of key units (1, 21, 31, etc) are shown in Fig. 2 to be clustered together into a group (module 26).

**In reference to claim 57**, Van Duyne discloses a unit as stated above, where said key units (1, 21, 31, etc) of each group (26, 28) are shown in Fig. 2 to be arranged in parallel columns.

**In reference to claim 58**, Van Duyne discloses a unit as stated above, where said plurality of keys form a keyboard (column 1 lines 66-68). Said keyboard would then be a musical instrument due to the audible sounds that can be produced from the plurality of keys (column 5 lines 6-9).

**In reference to claim 63**, Van Duyne discloses a unit as stated above, where the plurality of keys are formed as a mosaic keyboard through interlocking modules (column 2 lines 8-10), as can be seen in Fig. 3A.

**In reference to claim 64**, Van Duyne discloses a unit, where the keys are arranged around a center region so that they are operable by a single finger as stated above.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 52 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Duyne (US 4,972,752) in view of Matsushima et al. (US 5,313,010).

**In reference to claims 52 and 53**, Van Duyne discloses a unit as stated above, where the plurality of keys are shown in Fig. 2 to be arranged in an orientation to surround a center key (30). Therefore said plurality of keys are capable of producing sounds in a chordal arrangement based location of the plurality of keys. This reference fails to explicitly disclose the plurality of keys to be operated with the center key to produce a note one semitone higher or lower than operation without the center key.

However Matsushima et al. teaches a unit shown in FIG. 22 to have a plurality of keys (push button switches SR2, SR3) and a center key (push button switch SR1). Said plurality of keys (SR2, SR3) are shown in FIG. 12 to be operated together with the center key (SR1) to produce a note that is one semitone higher than when the plurality of keys (SR2, SR3) are operated without the center key (SR1). This is because the center key (SR1) sharpens the pitch of the sound produced by the plurality of keys (SR2, SR3) (column 8 lines 38-42), therefore producing a note that is one semitone higher than the note produced without the center key (SR1). This method is also



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capable of producing a note that is one semitone lower than the note produced without the center key.

Given the teachings of Matsushima et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the unit disclosed by Van Duyne with providing the plurality of keys to be operated with the center key to produce a note one semitone higher or lower than operation without the center key. Doing so would provide an easy method of correcting a sounded note when a user mistakes a key signature while playing the keyboard.

10. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Duyne (US 4,972,752) in view of Kellar (US 5,990,411). Van Duyne discloses a unit as stated above, but fails to disclose the keys to be spaced along a back of a guitar neck for operation by the thumb of a hand that does the fingering.

However Kellar teaches a guitar (201) shown in FIG. 2 to have keys (switches 209) on the back of the neck (205) for operation by the thumb of the user's hand that does the guitar fingering (column 1 lines 53-55).

Given the teachings of Kellar, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the unit disclosed by Van Duyne with providing the keys to be spaced along a back of a guitar neck for operation by the thumb of a hand that does the fingering. Doing so would provide a method and apparatus "so that the musician is able to play multiple parts of a musical piece" as taught by Kellar (column 1 lines 41-43).

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11. Claims 60-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Duyne (US 4,972,752) in view of Stranglo (US 4,022,097).

**In reference to claim 60**, Van Duyne discloses a unit as stated above, but fails to disclose the keys to be connected to operate alphanumeric characters selectively.

However Stranglo teaches an electronic musical unit (column 1 lines 4-5) where keys (pushbutton switches) are actuated to produce sounds (column 5 lines 22-29). The sounds that are produced from the actuated keys are supplemented with alphanumeric information so that the alphanumeric information describing the sounded notes can be displayed (column 20 lines 15-19).

Given the teachings of Stranglo, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the unit disclosed by Van Duyne with providing the keys to be connected to operate alphanumeric characters selectively. Doing so would provide a unit where chord types and relations are indicated on a display for teaching purposes as taught by Stranglo (column 20 lines 15-19).

**In reference to claim 61**, Van Duyne modified by Stranglo discloses a unit as stated above where the keys are shown in Fig. 2 of Van Duyne to be arranged in groups, where each group is a cluster of key units (I, 2I, 3I, etc). This arrangement allows for simultaneous operation by respective fingers, which would operate a selected ordered set of alphanumeric characters representing the sounded notes.

**In reference to claim 62**, Van Duyne discloses a unit as stated above, but fails to disclose the keys to be connected to operate lights.

However Stranglo teaches an electronic musical unit (column 1 lines 4-5) where keys (pushbutton switches) are actuated to produce sounds (column 5 lines 22-29).

The keys are further disclosed to operate lights when actuated (column 20 lines 22-25).

Given the teachings of Stranglo, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the unit disclosed by Van Duyne with providing the keys to be connected to operate lights. Doing so would provide a “visual effect appropriate for the music” as taught by Stranglo (column 20 lines 24-26).

***Allowable Subject Matter***

12. Claims 46-49 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter:

**In reference to claims 46 and 47**, the prior art does not teach nor suggest a keyboard unit comprising a group of keys arranged about a center in an array extending in two mutually transverse directions and adapted to be operable by a single finger with a playing area of maximum diameter 1.5 cm so that the single finger can operate a plurality of at least three of said keys together.

**Claims 48 and 49** depend on allowed claims 46 and 47 and therefore inherit all allowed claim limitations.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER UHLIR whose telephone number is (571)270-3091. The examiner can normally be reached on Monday-Thursday 8:00am-5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on 571-272-1990.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CHRISTOPHER UHLIR/  
Examiner, Art Unit 2832  
July 27, 2009

/Jeffrey Donels/  
Primary Examiner, Art Unit 2832